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Revisiting Formulary Apportionment in the UN Tax Negotiations: Design Choices and Policy Implications

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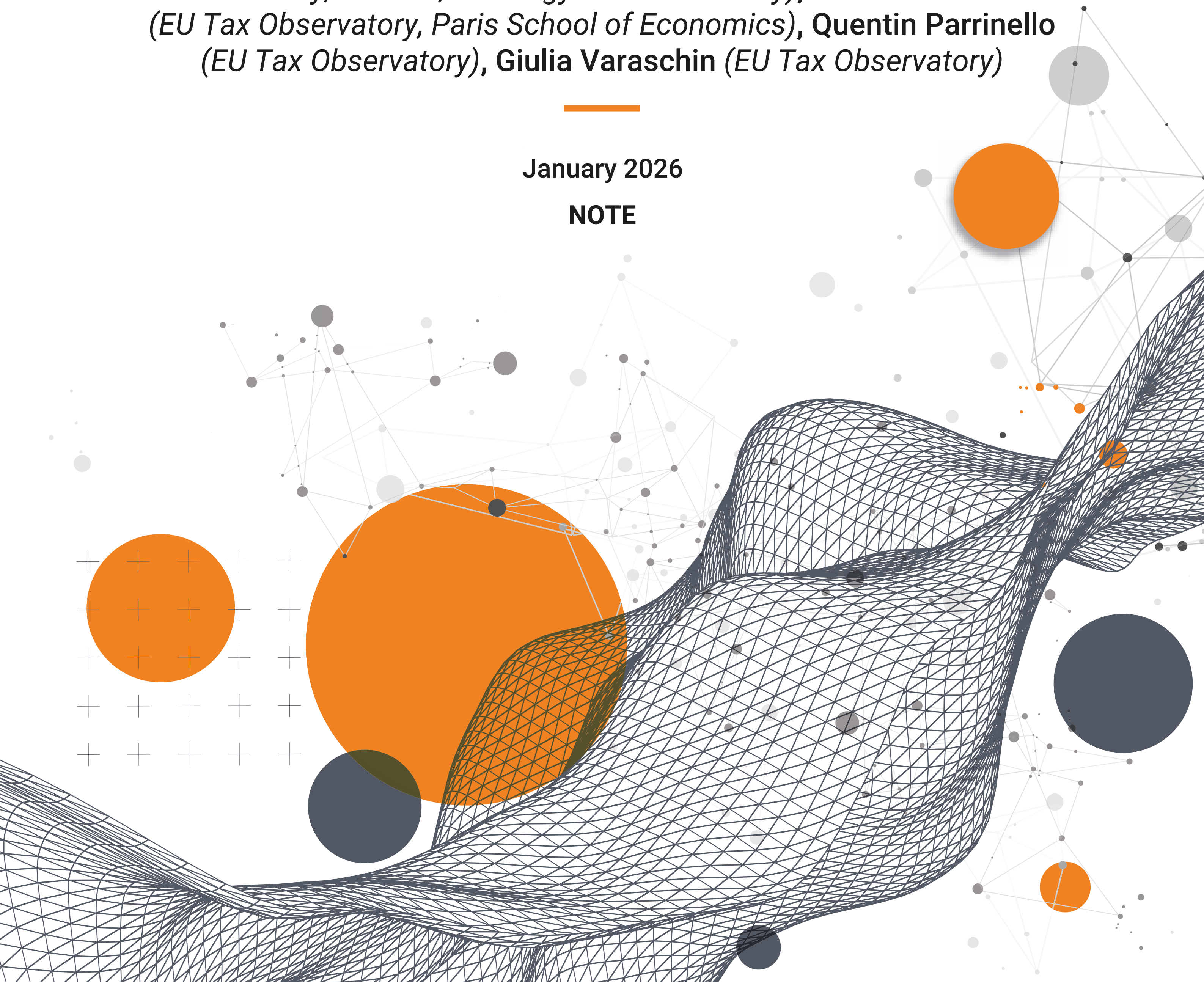
NOTE



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Introduction

Recent UN tax negotiations have renewed attention on a long-standing issue in international taxation: **how to allocate the profits of multinational enterprises (MNEs) across jurisdictions in a way that ensures countries receive their fair share of taxing rights.** At its core, this debate concerns both (i) the principles that determine where and how profits should be taxed, and (ii) the technical and administrative mechanisms required to implement these principles effectively in an open and increasingly digitalized global economy.

Today's international tax system is largely based on separate accounting, where countries can only tax the profits multinational groups declare locally. In this system, intra-group transactions are supposed to be priced as if they were happening between independent firms, in order to maintain profits where value is created and limit the ability to artificially shift profits to low-tax jurisdictions. In practice, this system, designed in the 1930s, is not robust to today's globalized economy, where MNEs' tax avoidance strategies reduce corporate tax revenues by up to 10% worldwide (Wier and Zucman, 2022). It is also increasingly hard to apply in an economy where firms can earn significant revenues in countries where they have little physical presence. Enforcement is further complicated by limited data and the complexity of multinational corporate structures.

Against this backdrop, formulary apportionment (FA) is being raised as a possible alternative in the context of UN negotiations. Under FA, profits would first be consolidated for the multinational group as a whole, and then shared across countries using a formula based on observable factors such as sales, assets, or payroll.[1] The main idea is to reduce reliance on internal pricing and to link taxing rights more closely to measurable economic activity. The allocation of taxing rights under FA would make current tax avoidance strategies obsolete. However, FA is not a single, fixed model. Different versions depend on key design choices, such as which multinationals are covered, how much profit is included, how the system interacts with existing rules, and which factors are used in the formula. These choices can strongly affect both how taxing rights are redistributed and what incentives companies and governments face.

This brief aims to support the policy debate by explaining what "formulary apportionment" could mean in practice under different approaches. It provides rough estimates for alternative designs, showing how the size of the profit base covered—and the potential shift in taxing rights across countries—can vary depending on the scope and how profits are defined. It then outlines the main legal and practical challenges that could arise if only some countries participate, including risks of double taxation and interactions with **existing tax treaties.**

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[1] This model of taxation is consistent with the principle of "economic allegiance", which has long underpinned the international allocation of taxing rights (Mehrotra, 2025). Under this principle, taxing rights should accrue to jurisdictions in proportion to the economic connections between a multinational enterprise and each country in which it operates. From a contemporary perspective, this principle justifies the allocation of taxing rights to destination countries. Indeed, consumption contributes to value creation (particularly, though not exclusively, in digitalised business models) and generates local economic externalities.

Finally, it reviews the main options for choosing formula factors, discussing the associated trade-offs, including data limitations, opportunities for manipulation, and the economic incentives they create.

1. Scope and profit base: what falls under formulary apportionment?

FA is not a binary choice. Its impact depends first and foremost on **which firms are covered** and **which share of their profits** is brought into the apportionment system. These two design choices jointly determine the scale of the reform, its administrative complexity, and its sensitivity to partial participation.

To illustrate the effect of these choices, **Table 1 presents indicative orders of magnitude** for the profits that would fall under FA under different scenarios, using 2019 data. The figures show how the size of the apportioned tax base varies depending on (i) whether FA applies to all MNEs, Pillar 2 MNEs (i.e. groups with turnover larger than EUR 750 million), or Pillar 1 MNEs (i.e. groups with turnover larger than EUR 20 billion and a 3-year average of profit margin above 10%), and (ii) whether all profits, foreign profits, or excess profits are included. Data sources and assumptions are described in **Appendix A.**

Three broad patterns emerge from these estimates:

- **Global MNE profits make for a large tax base,** on the order of EUR 7 trillion.
- **Restricting the scope to large MNEs reduces the tax base only moderately,** reflecting the strong concentration of profits among the largest groups. CbC-reporting companies represent around 15% of all MNEs but account for more than 75% of their profits. The top 100 companies (P1 companies) represent approximately 0,2% of all MNEs but account for around 10% of their profits.
- **Limiting FA to excess profits reduces the tax base by slightly more than half.** The OECD Pillar 1 reform restricted apportionment to the share of excess profit under the justification that these profits were most plausibly linked to market powers and intangibles than genuine economic activity in one specific country. However, such an approach also introduces additional complexity, both in defining excess profits and in managing coexistence with profits that remain taxed under separate accounting.

Data limitations. It is important to note that the data currently available for assessing the scope and scale of FA remain imperfect. Country-by-country reporting (CbCR) has significantly improved empirical analysis of multinational activity, but it does not allow for the localisation of final consumption and suffers from limitations in profit definitions. Assessing reforms that go beyond the scope of CbCR is therefore even more challenging. The estimates presented here should be read as indicative orders of magnitude.

Table 1. How much is in scope in terms of firms and profits? (2019)[2]

	All profits	Excess profits, as in Pillar 1
All MNEs *N. of firms*	EUR 7,054 Bn *50,000*	NA
CbCR MNEs *N. of firms*	EUR 5,165 Bn - 6,034 Bn *5,222-7,047*	EUR 2,187 Bn *1,936*
P1 MNEs *N. of firms*	EUR 809 Bn *89*	EUR 377 Bn *89*

See Appendix A.1 for data sources and construction. Estimates draw on Orbis consolidated accounts, aggregated CbCR data, and Barake & Le Pouhaër (2025). The scenario redistributing taxing rights on excess profits, as in P1 for all MNEs, necessitates data not currently available to us. The cell below represents a lower bound. Note that administrative complexity renders this scenario unlikely.

2. Formula options: how can profits be allocated?

Once the scope of firms and the profit base are defined, FA requires a third core decision: **how profits are allocated across jurisdictions**. Allocation is carried out through a formula based on a combination of observable factors—most commonly **sales, payroll, and tangible assets**—with weights assigned to each factor.

There is no single "correct" formula. Different choices reflect different views on what should anchor taxing rights and involve trade-offs between economic incentives, complexity to implement and administrative convenience.

2.1 Incentive effects

Factor choice affects behavioural incentives for both firms and governments:

- **Production-based factors (payroll and tangible assets) can still promote tax competition** because they tie taxing rights to inputs that firms can relocate or reorganise across borders. When profits are allocated based on the location of employees or physical capital, jurisdictions have incentives to attract these factors through lower statutory tax rates, targeted tax incentives, or regulatory concessions. Firms, in turn, may respond by shifting investment, employment, or the formal location of assets to lower-tax jurisdictions.
- **Sales-based formulas instead reduce opportunities and incentives for profit shifting** because they allocate taxing rights to the location of final customers, which firms cannot easily relocate. This makes destination-based sales both harder to manipulate.

[2] These quantitative estimates assume full participation and compliance with a multilateral agreement (see Chapter 4 for a discussion of the implications).

2.2 Definition and measurement constraints

The feasibility of different formulas depends on how easily factors can be defined and measured:

- **Payroll and tangible assets** are generally the easiest to define and verify, as they rely on physical presence and accounting information that is already widely reported. Intangible assets, instead, are generally excluded from apportionment formulas. First, defining their value would recreate similar issues as in the current system. Second, the value of activities generating intangible assets is already partly reflected in payroll (e.g. R&D workers' wages) and tangible assets (e.g. research labs).
- **Sales** raise more complex issues, particularly when measured on a **destination basis**, which attributes sales to the location of customers rather than to the seller. They are not yet consistently implemented in corporate accounting, especially for services and digital activities. Existing experience with VAT systems and recent international work on destination-based taxation nevertheless provide a credible basis on which such definitions could be built (see discussions on revenue sourcing in Pillar 1 Progress Report).[3]

2.3 Economic structure shapes country preferences

In practice, jurisdictions' preferences over factor choice and weighting are closely linked to their economic structure:

- **Countries with large consumer markets or persistent trade deficits** tend to favour formulas that place greater weight on sales, because these formulas allocate profits to the location of final demand.
- **By contrast, exporting economies** are more likely to favour payroll or asset-based factors, as these better reflect their domestic production footprint and allow them to retain taxing rights over profits generated by activities carried out within their borders, even when final consumers are located abroad.
- **High-tax jurisdictions** may also prioritise sales-based formulas because anchoring taxing rights in immobile consumer markets reduces firms' incentives to relocate real activity or investment in response to tax differentials, thereby limiting competitive pressures on statutory tax rates.
- **Sectoral composition** can further shape preferences. In some sectors, standard allocation factors may not adequately reflect where economic rents arise. In extractive industries, for example, taxing rights are often argued to belong primarily to the country where depletable natural resources are located, which may justify a stronger role for location-specific factors. Conversely, in digital services, even destination-based sales may be an imperfect proxy, as economic activity may be more closely linked to user engagement and data generation. This heterogeneity suggests that a single formula may not fit all sectors and could motivate proposals for sector-specific adaptations, albeit at the cost of greater complexity and coordination challenges.

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[3] https://www.oecd.org/en/publications/progress-report-on-amount-a-of-pillar-one_0afb5c80-en.html

Reallocation of taxing rights: what changes in practice?

Moving to FA **reallocates taxing rights across countries, it will also affect the tax base**. At the global level, it would affect tax revenues in three different ways.

On the one hand, FA would reallocate profits currently booked in tax havens (through profit shifting) to high-tax countries with genuine economic activity, resulting in an expansion of tax revenues, keeping the tax base constant.

On the other hand, FA would require consolidating profits at the global rather than national level. This would allow MNEs to consolidate losses in one country against profits in another, which would reduce the aggregate tax base. Existing estimates suggest that this effect could lower the global tax base by around 10%.[4]

Taken together, these two effects appear to broadly offset each other, implying that FA would mainly change *where profits are taxed* rather than *how much tax is raised globally*.

In the longer term, FA might have an ambiguous impact on tax competition. On the one hand, FA makes it harder for tax havens to attract MNEs' profits, as the latter would also need to move their production and sales. On the other hand, as discussed in the U.S. context (Delpeuch et Laffitte, 2019), FA might strengthen the tax and non-tax (e.g. subsidy) competition for the reallocation of real economic activity between production countries.

Based on our estimates for large multinational groups covered by Pillar Two[5], **around 30% of global taxing rights would shift to a different jurisdiction compared to the current system** (see Appendix A.2).

Under these assumptions, the largest gaining countries would increase their share of worldwide taxing rights by close to 4%, while the largest losing countries would experience a reduction of similar magnitude.

3. Internal discrepancies

Even with an international FA framework, taxing rights may still overlap. This can occur either because not all profits are brought under the formula, or because participating countries apply different formulas or definitions. In both cases, the issue is not participation as such, but how different taxation logics coexist within the same system. If these tensions are not actively managed, they can result in double taxation—or, in some cases, untaxed income. Countries may choose to tolerate such outcomes, but doing so involves clear trade-offs in terms of legal certainty, disputes, and the credibility of FA.

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[4] Ruud De Mooij & Li Liu & Dinar Prihardini, 2021. "An Assessment of Global Formula Apportionment," National Tax Journal, University of Chicago Press, vol. 74(2), pages 431-465.

[5] Under allocation scenarios using either 100% destination-based sales or an equally weighted combination of sales, payroll, and tangible assets—with countries assumed to favour the formula that maximises their share of taxing rights. For more details, see Appendix A.2

3.1 Income outside the apportionment base

Many FA designs apply only to part of multinational profits—for example, only to profits above a routine return, like in Pillar 1—while the remaining income continues to be taxed under separate accounting. This creates a hybrid system in which two sets of rules apply to the same multinational group. In such configurations, overlaps can arise because the same profits may be claimed both under separate accounting and under FA.

If participating countries do not wish to tolerate a degree of double taxation, they must address how taxing rights over the non-apportioned income interact with those reallocated under FA.

One approach, already developed under Pillar One, is to require participating jurisdictions to relinquish taxing rights over profits allocated elsewhere under the formula. **This is typically done through factor-based relief rules, often designed to mirror the allocation formula.** While this approach preserves the objective of single taxation, its effectiveness depends critically on how well relief rules are aligned with the allocation mechanism. Poor alignment can significantly distort the final distribution of taxing rights.

3.2 Divergent formulas and definitions among participants

Overlaps can also arise when participating countries adopt different formulas or define apportionment factors differently. In this case, conflicts do not stem from partial coverage but from inconsistent rules applied to the same profit base.

For example, if one country allocates profits mainly based on tangible assets while another relies primarily on sales, the interaction of these rules can lead to double taxation or gaps in taxation, depending on where production and consumption take place. Similar issues arise when countries use different definitions of key factors such as payroll, assets, or sales.

Where countries are unwilling to accept these outcomes, they must confront how differing formulas and factor definitions interact in practice and how overlapping claims are addressed. **Agreement on core design principles, harmonised factor definitions, and conflict resolution mechanisms** would be essential for an international FA system that aims to reduce conflict and deliver predictable outcomes.

4. Interaction with non-participating countries: how to coexist?

While many countries are striving to move toward a more unitary approach to taxing multinationals, uneven participation means that some jurisdictions may remain outside the apportionment system. In this case, **conflicts over taxing rights would become inevitable.** These conflicts could go in two main directions:

- **Income generated outside the apportionment system by MNEs headquartered in participating countries.** Multinational enterprises headquartered in participating jurisdictions may earn income in non-participating countries, for example, through exports or sales into those markets. In such cases, income linked to the activities of participating firms falls outside the scope of FA, giving rise to so-called **"nowhere**

income"—profits that are not allocated under the FA formula despite being generated by in-scope firms.

- **Income generated inside the apportionment system by MNEs headquartered in non-participating countries.** Multinational enterprises headquartered in non-participating jurisdictions may generate substantial profits within participating countries. These firms would continue to be taxed under separate accounting in their home jurisdiction, while part of their activity would fall within the FA system in participating countries. This coexistence creates **overlapping and potentially conflicting taxing rights** at the level of the multinational group.

In the current international tax system, such conflicts are managed throug**h double taxation treaties** and, in some cases, **reincorporation mechanisms,** such as *throwback* or *throwout* rules, which bring certain untaxed profits back into the apportionment base. Comparable mechanisms could, in principle, be applied in an international FA system. Their effectiveness, however, would depend critically on political agreement and enforcement capacity. Participating jurisdictions would face **three broad options**, each involving distinct legal, political, and fiscal trade-offs:

1. **Ignore the conflict and accept double taxation.**
   Participating countries could apply FA unilaterally and accept that some profits would also be taxed under separate accounting in non-participating jurisdictions. While administratively simple, this approach could increase legal uncertainty for firms, raise the likelihood of disputes, and create risks of retaliation.

2. **Renegotiate tax treaties.**
   A more comprehensive solution would be to renegotiate bilateral tax treaties to accommodate FA and clarify the allocation of taxing rights vis-à-vis non-participating countries. While this approach could provide greater legal certainty, it risks being time-consuming and uneven in its implementation, given the large number of treaties involved and the asymmetry in negotiating power across countries. The design of a multilateral instrument for updating several treaties at once could be a key tools.

3. **Provide unilateral or coordinated relief from double taxation.**
   Participating countries could choose to relieve double taxation through tax credits, exemptions, or other mechanisms when profits are also taxed by non-participating jurisdictions. This could reduce conflict, but it would come at the cost of foregone revenue for participating countries - and at the advantage of non-participating ones. The scale of this cost would depend on which countries remain outside the system and on the design of the relief mechanisms.

From this perspective, the choice of how to deal with **non-participating large economies** is particularly consequential. The absence of the United States from the UN negotiations, for example, could significantly affect both revenues and incentives, given that U.S.-headquartered firms account for around **29% of companies and 34% of profits among the world's largest 2,000 firms** (Forbes, 2019).

This raises the question of whether FA should come with **collective countermeasures against persistently non-cooperative jurisdictions**, as a way to incentivize participation (through defensive measures, conditional market access, or other forms of collective leverage).

Conclusions

FA has re-emerged in the UN tax negotiations because it directly addresses several structural weaknesses of the current international tax system: the disconnect between taxable profits and real economic activity, the heavy reliance on complex intra-group pricing rules, and the growing difficulty of taxing highly integrated multinational groups. As this brief shows, FA has the potential to significantly reshape the allocation of taxing rights—but its effects depend fundamentally on how it is designed and implemented.

First, **the potential scale of reform is substantial**. Global MNE profits amount to roughly EUR 7 trillion. Restricting FA to large multinational groups, such as those covered by Pillar Two, reduces the tax base only moderately, reflecting the strong concentration of profits among the largest firms. As a result, even relatively targeted FA designs would involve a meaningful redistribution of taxing rights across countries.

Second, the **primary impact of FA lies in redistribution rather than revenue expansion**. While FA would reallocate profits currently booked in low-tax jurisdictions toward countries with observable economic activity, global profit consolidation would also allow cross-border loss offsetting, which reduces the aggregate tax base. Existing estimates suggest that these effects broadly offset each other, implying that FA would mainly change *where* multinational profits are taxed rather than *how much* tax is raised globally. Over time, FA could reshape tax-competition incentives, with ambiguous revenue effects.

Third, the **choice of allocation formula is a central policy decision**. Sales-based formulas tend to reduce incentives for profit shifting and tax-driven relocation, while production-based factors might still maintain a degree of tax competition for real resources. Differences in countries' economic structures—and in some cases sector-specific considerations, such as extractive industries or digital services—help explain divergent preferences and underscore the difficulty of identifying a single "neutral" formula. These tensions make coordination across countries indispensable.

Fourth, the **feasibility and effectiveness of any FA system depend critically on how coexistence is managed**—both within the system and vis-à-vis non-participating countries. Partial profit coverage, divergent formulas, and uneven participation create risks of double taxation or untaxed income. Participating countries may choose to tolerate these outcomes, renegotiate tax treaties to accommodate FA, or provide unilateral or coordinated relief through credits or exemptions, each option involving clear trade-offs between legal certainty, revenue, and political feasibility. The non-participation of large economies, particularly major headquarters countries, would substantially shape both the revenue outcomes and the political sustainability of the system.

Finally, the **credibility of any international move toward FA ultimately depends on the availability of robust, harmonised, and publicly accessible data** on multinational activity.

While existing reporting frameworks provide a useful starting point, they remain insufficient for fully assessing or implementing more ambitious reforms. The implementation of harmonised reporting standards that allow for meaningful economic analysis is therefore an essential condition for any durable reform of the international tax system.

Taken together, these findings indicate that FA provides a credible framework for addressing key weaknesses of the current international tax system, particularly the misalignment between taxing rights and economic activity. While its effectiveness depends on careful design and coordination—especially in a context of partial participation—the analysis shows that significant reallocations of taxing rights are possible under realistic design choices. For the UN negotiations, the central issue is therefore how to translate these principles into meaningful and workable arrangements.

Bibliography

- Forbes. (2019). The Global 2000. https://www.forbes.com/lists/global2000/
- Ruud De Mooij & Li Liu & Dinar Prihardini, (2021). "An Assessment of Global Formula Apportionment," National Tax Journal, University of Chicago Press, vol. 74(2), pp-431-465.
- Barake, M., Le Pouhaër, E. (2025) "Tax revenue from Pillar One Amount A: country-by-country estimates". Int Tax Public Finance, n°32, pp-680–740. https://doi.org/10.1007/s10797-024-09859-4
- Delpeuch, S., Laffitte, S. (2019) "La taxation unitaire à la lumière des expériences nord-américaines", Focus du CAE 37
- Mehrota, A. K. (2025). The Intellectual Origins of the Modern International Tax Regime: Edwin R. A. Seligman, Economic Allegiance, and the League of Nations' 1923 Report. Journal of Law and Politcal Economy, 5(1).
- O'Reilly, P. et al. (2023), "Update to the economic impact assessment of pillar one: OECD/G20 Base Erosion and Profit Shifting Project", OECD Taxation Working Papers, n°66, OECD Publishing, Paris, https://doi.org/10.1787/7c35a55c-en.
- Wier Ludwig, and Zucman, Gabriel (2022), "Global Profit Shifting", UNU Wider Working paper, n°121.
- International Monetary Fund (IMF). 2022. Fiscal Monitor: Fiscal Policy from Pandemic to War. Washington, DC: IMF.

Appendix A: Methodology

This methodological appendix provides details on the figures reported in Table 1 of the Note and on the computation of taxing right changes.

A.1: Orders of magnitudes

Data on the activity of multinational enterprises remains imperfect. In practice, access to data is most often linked to administration (and taxation): information is typically collected to enforce a rule, most commonly a tax rule. In the absence of a global authority regulating the activity of multinational enterprises, it is difficult to obtain a comprehensive and accurate picture of their operations.

For the top 100 largest companies (bottom row of the table), annual financial reports—required for stock market listing—provide precise information on firms' consolidated activities. Because these companies are, by definition, few in number, detailed analyses can be conducted at the firm level. This approach is used, in particular, by Barake and Le Pouhaër (2024) and by O'Reilly et al. (2023) to analyze the consequences of the OECD/G20 Pillar One project. These studies make it possible to identify the number of firms that would be affected by a project applied only to residual profits (i.e. profits exceeding a 10% profitability threshold), as well as the magnitude of these residual profits. The last row of the table is based on Barake and Le Pouhaër (2024).

The introduction of country-by-country reporting (CbCR) data under Action 13 of the OECD-led BEPS project has substantially improved the measurement of the activity of multinational enterprises with annual revenues exceeding EUR 750 million. Depending on the year, this represents between 5,000 and 8,000 multinational groups. These firms are required to report their activity on a country-by-country basis to their reference tax administration. In turn, tax administrations consolidate the country-by-country activity of all their multinational groups and transmit the information to the OECD, which publishes an aggregated database offering a detailed view of multinational production by country pair.

However, because this database is not publicly available at the firm level, another source of information must be used to estimate the extent of "residual" profits of these multinational enterprises. The commercial Orbis database provides consolidated information at the level of multinational groups. While it does not allow, by contrast, for a breakdown of economic activity by country, it does make it possible to compute residual profits. Applying the same size threshold as for the CbCR data yields approximately 2,000 firms. Their profits in excess of a 10% profitability threshold, therefore, amount to 2,187 billion euros in 2019 (column 3, row 3).

Finally, when considering all multinational enterprises, the orders of magnitude become less precise, as no coordination project has been envisaged for such a large number of firms. The IMF (Fiscal Monitor, 2022) estimates the number of multinational enterprises at around 50,000 in 2019. National accounts provide an indication of the foreign profits of these firms, which enter the balance of payments as national income earned abroad. This is what allows Wier and Zucman (2022) to estimate total foreign profits earned by all multinational enterprises at 2,308 billion euros. By applying the ratio between foreign profits and total profits

of multinational enterprises observed in the CbCR data, it is then possible to estimate the total profits of MNEs (row 2, column 2). By contrast, to our knowledge, there is no sufficiently precise database that would allow for an estimation of the total residual profits of all multinational groups (row 2, column 3).

A.2 Taxing rights changes

We compute the share of taxing rights reallocated at the global level following the implementation of FA.

We rely on Country-by-Country Reporting (CbCR) data to construct country-level measures of multinational enterprises' profits, employment, and capital over the period 2018–2019, using the average across the two years. To proxy total consumption, we use World Bank data on final consumption expenditure, following the approach proposed by the OECD (O'Reilly et al., 2023).

A country's current share of taxing rights, denoted s_i^c, of a country i is proxied by the share of worldwide profits located in this country. is proxied by its share of worldwide profits reported by MNEs. To proxy the allocation of taxing rights under FA, denoted s_i^{FA}, we proceed in three steps. First, we assume that countries may choose between two alternative apportionment formulas: (i) an equally weighted formula assigning one-third of the tax base to sales, employment, and capital, and (ii) a destination-based formula assigning 100% of the tax base to sales. Second, we assume that each country selects the formula that maximises its own share of taxing rights. Third, given these choices, we compute the resulting allocation of the global tax base across countries.

We then measure the change in the allocation of taxing rights as the difference $s_i^{FA} - s_i^c$. To quantify the extent of reallocation at the global level, we sum the positive values of this difference across countries. As discussed in the main text, allowing each country to select its preferred formula independently implies the coexistence of heterogeneous apportionment rules, which mechanically generates double taxation.